Name: Date:

Polynomial Factoring solution (version 650)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 10x + 36 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(10) \pm \sqrt{(10)^2 - 4(1)(36)}}{2(1)}$$

$$x = \frac{-(10) \pm \sqrt{100 - 144}}{2(1)}$$

$$x = \frac{-10 \pm \sqrt{-44}}{2}$$

$$x = \frac{-10 \pm \sqrt{-4 \cdot 11}}{2}$$

$$x = \frac{-10 \pm 2\sqrt{11}\, i}{2}$$

$$x = -5 \pm \sqrt{11}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $2 - 8i$ and $-7 - 5i$ in standard form $(a + bi)$.**

Solution

$$(2 - 8i) \cdot (-7 - 5i)$$

$$-14 - 10i + 56i + 40i^2$$

$$-14 - 10i + 56i - 40$$

$$-14 - 40 - 10i + 56i$$

$$-54 + 46i$$

Polynomial Factoring solution (version 650)

3. **Write function $f(x) = x^3 + 2x^2 - 21x + 18$ in factored form. I'll give you a hint: one factor is $(x - 1)$.**

Solution

	1	2	-21	18
1		1	3	-18
	1	3	-18	0

$$f(x) = (x-1)(x^2+3x-18)$$

$$f(x) = (x-1)(x+6)(x-3)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+1)^2 \cdot (x-3) \cdot (x-8)^2$$

Sketch a graph of polynomial $y = p(x)$.